

## SCHOOLS AND THE DISABILITY: A CASE OF INDONESIAN CHILDREN

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### Abstract

Fulfilling basic right of children on education is an important for future life of young generation. This is not only directed to normal children, more importantly to disadvantage children with due to physical limitations. The 2009 Socioeconomic Survey (Susenas) Data of Indonesia is available to see concerning the characteristics of children with disabilities. Some possible factors are associated with their probability attending schools at basic education level. In general, the index of children with disabilities (ICDs) in Indonesia ranges between 5/000 to 9/000 children. Children who are living in small islands are relatively high in ICDs. No gender discrimination in schools is found. When geographical and level of economic of household is used to predicts, this study observed no difference in school participation at ages of 7-12, but children's probability from higher economic status were 1,45 times greater compared to those from lower economic status of parents.

**Keywords:** Characteristics of disability, school enrolment, inclusive education

### 1. INTRODUCTION

Equity in education is one of targeted policies in Indonesia's education system. The objective of policy is to guarantee that children at all conditions are able to attend schools from lower to middle level until they are able to enter labor markets. Due to a great variation in physical, geographical and economic status, education of children with disabilities calls for a serious attention.

Researches on equity in education are available in education literatures elsewhere (Jain, 1997;Handa, 2002; Elfindri, 2003; Lewin, 2005). These researches are various in objectives. It starts to look at factors contributing to increase in the likelihood of children out of education systems (SMERU, 2000;Fernandez, 2014). Some were concerned with the characteristics of children who are out of education who were from ultra poor families (Fernandez, 2014; Aizer et all., 2014). A great variations of enrolment rates exists in primary to secondary enrolment in education between regions in poor countries elsewhere (Handa, 2002; King, 2005). The benefits of inclusive education have also been found (Ruijs and Peetsma, 2009) and some possible learning assistances (Chitiyoa, Changarab and Chitiyoc 2008) and social assistances (Aizer, Shari Eli, and Lieras-Muney 2014)

In most cases, the study observing normal children in their sample or in their study has some methodological limitations. This is mainly due to the fact that some children have physical limitations, which were covered in the sample (Ruijs and Peetsma, 2009). Combining the analysis between normal children and children with physical limitations has a serious impact on their analysis since children with disabilities are

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more likely to quit from schools much earlier compared to normal children (Mudjito, Elfindri and Harizal, 2012).

In most cases, school enrolment rates are often associated with economic status of children, where children from rich families are often easier to fulfill any costs to enter formal school compared to those from poor families. When location of school is considered, school enrolments are much higher for children living in distant area from school location (Handa, 2002).

In fact, understanding children with disadvantages are serious problem because the nature of children with disabilities is different from the normal children. In this situation, children with disabilities often face difficulties in reaching school location. The unequal distribution of schools may have serious impact on children with disabilities. A limited analysis of children with disadvantage is due to limited data available (Citiyoa et al., 2008). Consequently, there is no information on how many children at school are included as disabilities, what are their characteristics, and what is the probability of children with disabilities attending the schools and how school is designed (Ruijs and Peetsma, 2009). An analysis of school enrolment of children with disabilities has a serious implication for their future life. Adequate analysis is needed.

School enrolment for young normal children is much easier since there is no tuition fee for primary to secondary levels of education. Besides investing in education has various benefits, externalities of well-educated children are evidences found elsewhere (Yoshikawa, et all, 2013; Elfindri and Rezki, 2014). This may make easier for all children go to school. Though the affirmation of education is already declared, when school facilities are not available for children with disabilities, those living in a distant area, this may be difficult to them to reach a certain level of education. Special school for children with disabilities may be of benefit to those living close to school facilities.

This research deals with counting the number of children with disabilities (CDs) and its characteristics. It continues to look at the enrolment rate in education. Section three analyzes the logistic regression of likelihood of children with disabilities attending primary and secondary schools, and examines some possible factors contributing to the likelihood of CDs to keep in school. This study ended up being a conclusion.

## 2. CHARACTERISTICS OF CHILDREN WITH DISABILITIES (CDS)

### 2.1 Characteristics

Indonesia as an archipelagic nation characterized by a large number of islands with main islands Java, Sumatra, Kalimantan, Sulawesi, Papua, Bali and Nusa Tenggara. The rests are small islands. More than 240 million people and some reside along coastal areas, mainly as fisherman, and living in uphill mountains and near forests. Such location is quite far away from the good physical accessibility. These geographical characteristics are quite difficult in the sense to provide school facilities for disperse households. Children with disabilities are also limited in their chance to go to nearest school.

Table 1: Estimating Number of Children with Disabilities in Indonesia, 2009

Age Group(years)	Total Children	Normal Children	Disabled Children	% of Children with disable
0-6	28,545,567	28,457,483	88,084	0.31
7-12	26,855,130	26,695,472	159,658	0.59
13-15	12,795,102	12,688,137	106,965	0.84
Total	68,195,799	67,841,092	354,707	0.52

Source: Calculated from the 2009 Susenas Data Set

According to our estimation, around 5,2 per 1000 of children (age 0-15 years) in Indonesia were found to have physical disabilities<sup>5</sup>. When we used the Disable Index (DI)<sup>6</sup> as a basis to estimate the number

<sup>5</sup> This estimation is much lower if we compared with the autism phenomenon in the US. In 2012 it was reported that around 11 per 1000 children were classified as autism, where the DI in 2002 was still 0.6 per

of CDs. Table 1 shows the number of CDs in Indonesia, according to age group. It is estimated that 354.703 of children are classified as disabilities. The difficulties in counting total number of children are of course the number was obtained without any various medical assessments. So the estimation is predicted quite lower than what we expect.

When we classifies according to various characteristics, it is shown that there is difference in DI according to gender status, where males DI are much higher compared to females DI. The DI of children living in seashores is much higher than that of living in inland areas. Among socioeconomic classifications, The DI of children from lower income families is much higher compared to higher income families.

Table 2: Disable Index per 000 according to socioeconomic characteristics (Susenas, 2009)

Character	Variables	Disabilities Index (000)	Number
Sex	Male	0.57	199276
	Female	0.47	155431
Geography	Seashore	0.61	34074
	Inland	0.51	320707
Location	Urban	0.51	161334
	Rural	0.53	1933373
HH Income	High	0.45	107799
	Middle	0.50	112722
	Lower	0.63	134186
Province			
	NAD	0.42	5121
	Sumut	0.55	23918
	Sumbar	0.62	9270
	Riau	0.52	9548
	Jambi	0.56	4978
	Sumsel	0.42	9161
	Bengkulu	0.56	3055
	Lampung	0.42	9630
	Babel	0.69	2035
	Kepri	0.32	1615
	DKI	0.32	7363
	Jabar	0.48	60700
	Jateng	0.51	43843
	Jogya	0.50	5655
	Jatim	0.50	47190
	Banten	0.60	19953
	Bali	0.76	7055
	NTB	0.47	6733
	NTT	0.81	13420
	Kalbar	0.46	6701

1000 children.

<sup>6</sup>Disable index (DI), is number of disable children at i age group divided with number of population at i age group times 1000.

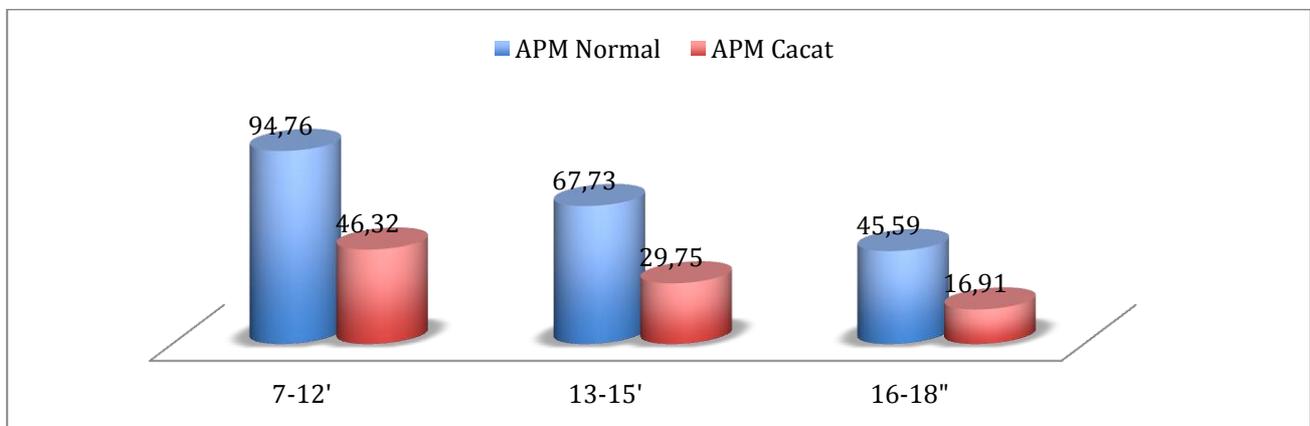
	Kalteng	0.45	3272
	Kalsel	0.84	8690
	Kaltim	0.34	3236
	Sulut	0.49	3194
	Sultengah	0.62	5566
	Sulsel	0.59	14616
	Sulteng	0.73	6069
	Gorontalo	0.95	3099
	Sulbar	0.80	3051
	Maluku	0.58	3096
	Maluku Utara	0.32	1106
	Papua Barat	0.14	388
	Papua	0.32	2380

The most important figures when we see the DI according to provincial levels show where and why the DI is different according to provincial and locations. It is more important that we found that provinces such as West Sumatra, Bangka Belitung, Kalimantan Selatan, Gorontalo, Bali, Sulawesi Tengah, Sulawesi Barat, Banten and NTT where the DI above the 0.60 per 1000 children, even in Gorontalo have 0.95 per 000 children. In contrast with Papua Barat, North Maluku, DKI and Kepulauan Riau, the DI index were 0.31 per 000 children. But this is still a big question why in Papua the index is too low. According to our understanding, in Sulawesi this is quite close each other and the DIs are generally much higher. But in Sumatra, the DIs is not clear-cut. NTT is quite similar when we correlate with the poverty incidence.

## 2.2. School Enrolment

Figures 2 calculate the enrolment rate of CDs, and we compare with the school enrolment rate of normal children. Importantly, the data reveals that the enrolment rates of CDs at the 7-12 years of age are much lower than those normal children. According the MDGs target, universal education is shown by reaching all of eligible children's access to education. The condition in 2009 shows, around 46,32% of CDs has access to primary school, and there is a significant decline in enrolment rate for the 13-15 years and the 16-18 years respectively (upper middle education). A significant decline in enrolment rates in middle and upper education is partly due to distance and location schools. This is typically barrier for disable children.

Figure 1: Enrolment rate of children in Indonesia 2012



Source: Calculated from The 2009 Susenas Data

### 3. MODEL

The 2012 Susenas data is available to estimate the probability of children at the school aged attending the school. There are some steps to select the sample. The first stage is to select individual child who are reported as disable. The number of observation in selected sample was 354.707 children. Then we continue to look at children who enroll or out of school at the age groups (where i, 7-12 and 13-15 years of age respectively) since Susenas 2009 data are available to question on children with disabilities and their education status. Around 46% of CDs attending the schools, which are far, is lower than the probability of normal children at schools.

According to the 2012 Susenas, the core questionnaire asking individual characteristics at households, locations, and economic status of households are available. A special question also asks the physical status of children at the school age. The Susenas does not ask any learning outcomes and other education achievements. From selected CDs, number of observations, means and standard of deviation in each variable selected are shown in Appendix 1.

Because the dichotomous nature of dependent variable (attending/not attending school of CDs) and the mean probability of dependent variable are low (0.28 for primary school, and 0.11 for lower secondary level), we used a logistic regression model to the sample. The logistic regression model is specified as

$$\text{Log} \frac{P_i}{1 - P_i} = a + b X_i + c Z_i + e_t \quad (1)$$

As  $P_i$  is the probability of that children  $i$  will choose to attend school,  $X_i$  is a vector of individual and demographic characteristics,  $Z_i$  is vector of geographical representing locations,  $a$ ,  $b$ , and  $c$  are estimated coefficients, and  $e_t$  represents a random error terms which is logistically distributed.

### 4. RESULTS

Table 3 shows the probability of children with disability to enroll in schools. We divide the children into two groups, the first group is children who are at the age of 7 until 12 years old and the second group is children who are 13 until 15 years old. When we analyze group 1, children with disability tends to attend school if they living in urban area. Our result shows that the probability will increase by 0.8 point. Children coming from medium income family tend to have higher probability of attending primary school (1.6 point) compared with children coming from rich income families (1.4 point). The reason why medium income family has higher probability than rich family is because the later has a tendency to provide homeschooling education for their children. However, rich income family has a higher probability (2.4 point) to register their children into school for 13-15-aged children. Meanwhile for medium income family, the result is statistically insignificant.

Table 3: Log Odd Coefficients of Probability of CDs Attending Schools in Indonesia (n=1428)

Variables	CDs enroll at school at age 7-12 years (yes=1)		CDs enroll at school at age 13-15 years (yes=1)	
	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.
Sex	1.141603	.158891	1.259984	.2445531
Age	57.82308	22.24632***	2.34e+11	8.10e+11***
Age square	.8049867	.0155321***	.3889273	.0488064***
Live in Urban	1.397185	.2165375**	1.084293	.22477155
Live in Off-shore	.7800767	.1399504	1.062358	.2711572
Live in Small island	.9017572	.1679699	1.224278	.3316677
Medium income	1.617203	.2773926***	1.422663	.3550833
Rich income	1.48112	.2648803**	2.413316	.6079811***
Constant	5.75e-09	1.08e-08***	6.28e-80	1.50e-78***
Wald chi2	454.86		357.10	
Pseudo likelihood	-622.27223		-334.6423	
Pseudo R2	0.2677		0.3479	

\*\*\*Significance at 1%  
 \*\* Significance at 5%  
 \* Significance at 10%

Table 4 illustrates the probability of children with disabilities attending schools if we distinguish in terms of geographical aspect. We try to divide it into three area, Sumatra Island, Java Island, and Eastern part of Indonesia. In Sumatra, children living in Small Island have a higher probability (0.3 point) to enroll in primary school. The interesting findings are when we analyze the results in eastern part of Indonesia. In eastern part of Indonesia, male children with disabilities have a higher probability (1.48 point) to attend primary school. Children who are from urban area also have a significant number of chances to enroll in primary school. Similarly to the result from table 3, children coming from middle-income family have a higher probability to have primary education compared to those from higher income family.

Table 4: Log Odd Coefficients of Probability of CDs Attending Schools at age 7-12 years in Indonesia

Variables	CDs (yes=1)		
	Sumatra (402)	Java (349)	EASTERN (677)
Sex (MALE=1)	.8484723	1.198705	1.48447*
Age (in years)	53.28658***	52.4183***	66.77736***
Age square	.807408***	.8046498***	.801352***
Live in Urban (Yes=1)	0.8771529	1.205051	2.209343***
Live in Off-shore (Yes=1)	1.276411	.7252193	.7430538
Live in Small island (Yes=1)	.3586011**	-	1.257313
Medium income	1.255672	1.466653	1.893529***
Rich income	1.325901	1.358651	1.738775**
Constant	5.75e-09***	1.94e-08 ***	1.35-E09***
Wald chi2	135.73	136.00	202.27
Pseudo likelihood	-176,33055	-145.44706	-289.90988
Pseudo R2	27,79	31,86	25,86

\*\*\* Significance at 1%  
 \*\* Significance at 5%  
 \* Significance at 10%

Similar to table 4, table 5 tries to analyze the probability of children with disabilities to enroll in primary education. In this table we try to examine the probability for children aged 13-15. We use the same criteria with table 4 and also divide the sample into three groups, Sumatra, Java, Eastern part of Indonesia. In Sumatra, children from high-income family have a higher probability for entering schools compared to those from middle-income family. Meanwhile in Java, variable that has significant impact for school enrollment is whether he or she lives in urban area or not. If the child lives in urban area, thus the probability for this group to enter the school will be greater (2.06 point) than if they live in rural area. However, in Eastern part of Indonesia, variable that increases the probability of children with disabilities for attending school is if they come from higher income family. The probability of children from rich family to earn and attend school will increase for around 3.35 point.

Table 5: Log Odd Coefficients of Probability of CDs Attending Schools at age 13-15 years in Indonesia

Variables	Control for main island		
	Sumatra (402)	Java (349)	Eastern Indonesia (677)
Sex (MALE=1)	0.8847116	1.274279	1.636591
Age	1.42e+15***	4.73e+10***	5.15e+10***
Age square	.2818087***	.412618***	.4124213***
Live in Urban	1.042632	2.060349*	0.6394064
Live in Off-shore	1.264357	0.6639744	1.131011
Live in Small island	1.427077	-	1.319585
Medium income	2.637859*	1.263429	1.342534
Rich income	5.494342***	0.7603624	3.35672***
Constant	1.8e-105***	3.44e-75***	6.91E-76***
Wald chi2	139.16	82.14	154.47
Pseudo likelihood	-92.704977	-87.227629	-143.5059
Pseudo R2	42.88	32.01	34.99

\*\*\* Significance at 1%  
 \*\* Significance at 5%  
 \* Significance at 10%

## 5. CONCLUSIONS

The aim of this paper is to estimate the number of children with disabilities in Indonesia and its characteristics, and it examines some of possible factors contributing to increase or decrease their enrolment rates. The 2009 Susenas data in Indonesia integrated questions on disabilities, which can be calculated according to their education status.

This study found a great variation of incidence of disabilities, particularly when we look at according to provincial levels, household economic status, and gender status, yet no difference in DIs between urban and rural. The logistic regression model is used to see the probability of children with disabilities to attend school. We only select the data for primary level of education and lower secondary education. Our study observed that no significant difference in enrolment rate of children according to gender (except for children in Eastern part of Indonesia) is found. CDs decline their probability to enroll in secondary schools when we compare with primary level of education. Our study consistently observes that household economic status is important variable in explaining the probability of children with disabilities to enroll in schools.

This study implies that CDs have to be easily reached by any education programs targeted to them. Affirmation policy can be directed to inclusive education.

Appendix 1 Name of Variables, Definitions, Means and Standard Deviations

Variables	Definitions	Mean	Standard deviation
Full sample (n=1428)			
<b>School Enrolment</b>			
Educ1	Disabilities Children at age 7-12 attending school yes=1	.2822129	.4502341
Educ2	Disabilities Children at age 13-15 attending school yes=1	.1162465	.1162465
<b>Demography</b>			
Sex	Male=1; female=0	.5637255	.4960962
Age of children	Age of children in years	11.28641	2.618978
Age squared	Age of children in squared	134.2374	58.3689
<b>Geography</b>			
Urban	Children in urban yes =1	.3291317	.4700625
Off-shore	Children life in off-shore yes=1	.2107843	.4080084
Small island	Life in small island yes = 1	.1918768	.3939146
Household income	Per-capita household income	351289.9	.240743.9

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